REMARKS

Reconsideration and allowance of this application are respectfully requested. New claims 27-29 have been added[1]. Claims 1-29 are now pending in the application, of which claims 4, 5, 11 and 15-26 have been withdrawn. The rejections are respectfully submitted to be obviated in view of the remarks presented herein.

Rejection Under 35 U.S.C. § 102(e) - Murray et al.

Claims 1 and 6 have been rejected under 35 U.S.C. § 102(e) as allegedly being anticipated by Murray et al. (U.S. Patent No. 6,633,599; hereinafter "Murray"). The rejection is respectfully traversed.

Independent claim 1 recites a laser apparatus comprising:

> a block;
>
> a plurality of laser diodes respectively having light-emission points and being fixed to said block so that the light-emission points are aligned along a direction; and
>
> a collimator-lens array integrally formed to contain a plurality of collimator lenses which are arranged along a direction and respectively collimate laser beams emitted from said plurality of laser diodes;
>
> wherein said block has a lens-setting surface which is flat, perpendicular to optical axes of said plurality of laser diodes, and located on a forward side of said plurality of laser diodes at a predetermined distance from said light-emission

[1] Support for the claim amendment is found in the specification on at least page 19, lines 4-23.

points, and said collimator-lens array is fixed to said block so that an end surface of the collimator-lens array is in contact with said lens-setting surface.

The Examiner maintains that Figs. 11 and 12 of Murray teach all of the elements of claim 1. Murray is generally directed toward a laser apparatus with individual emitters (1) and a microlens array (4) as shown in Figs. 11 and 12. Murray's apparatus includes a heatsink (20) on which a laser diode bar (2) is bonded through a bonding agent (19) (column 3, lines 23-29). Murray's microlens (4) are also fixed in place by mounting structures (5) that may either contain a V-groove or may be glued using epoxy to the diode bar (2) (column 2, line 65 to column 3, line 3).

However, there is no teaching or suggestion in Murray of "a lens-setting surface which is flat, perpendicular to optical axes of said plurality of laser diodes, and located on a forward side of said plurality of laser diodes at a predetermined distance from said light-emission points, and said collimator-lens array is fixed to said block so that an end surface of the collimator-lens array is in contact with said lens-setting surface," as recited by claim 1. Although Figs. 11 and 12 of Murray show microlens (4) being fixed in place by mounting structures (5), Murray fails to teach or suggest the lens-setting surface of the claimed invention. The top surface of Murray's heatsink (20) can not be interpreted as the claimed lens-setting surface because even if this surface of heatsink (20) is located a predetermined distance from and on a forward side of the laser diode bar (2), the microlens (4) is fixed to the mounting structures (5) and is not in actual contact with what the Examiner has interpreted as being a lens-setting surface (the top surface of the heatsink (20)).

Also, Murray fails to teach or suggest the claimed lens-setting surface because Murray does not disclose any surface in contact with the microlens (4) which is perpendicular to the optical axes of the emitters (1) or laser diode bar (2). The mounting surfaces disclosed by Murray (on top of the heatsink (20) and on top of the mounting structure (19)) are all ***parallel to optical axes of the laser diodes***. As shown in Murray's Fig. 11, the surfaces of the mounting structure (5) and heatsink (20) which the microlens (4) is in contact with and mounted to are ***parallel*** to the optical axes of the emitters (1) and laser diode bar (2). Conversely, the claimed invention recites a lens-setting surface which is "**perpendicular** to optical axes of said plurality of laser diodes" (emphasis added).

At least by virtue of the aforementioned differences, Applicants' claim 1 distinguishes over Murray. Claim 6 is a dependent claim including all of the elements of independent claim 1. Therefore, claim 6 is patentable over Murray for at least the aforementioned reasons as well as for its additionally recited features. Reconsideration and withdrawal of the rejection under 35 U.S.C. § 102(e) are respectfully requested.

Rejection Under 35 U.S.C. § 103(a) - Murray et al.

Claims 12 and 13 have been rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Murray. The rejection is respectfully traversed.

Claim 12 recites a method for producing a laser apparatus including the element of "forming in said block a reference surface which is flat, perpendicular to optical axes of said

plurality of laser diodes, and located on a forward side of locations at which said plurality of laser diodes are fixed to the block."

As discussed above, Murray fails to teach or suggest any forming of a reference surface which is flat, *perpendicular to optical axes of the plurality of laser diodes*, and located on a forward side of locations at which the plurality of laser diodes are fixed to the block. Therefore, claim 12 is patentable over Murray for at least the aforementioned reasons. Furthermore, claim 12 also recites

> adjusting a position of each of said plurality of laser diodes in a direction parallel to said optical axes based on information obtained by measurement of a focal length of one of the plurality of collimator lenses corresponding to said each of said plurality of laser diodes, and fixing said each of the plurality of laser diodes at the adjusted position; and
>
> adjusting positions of said plurality of collimator lenses along said reference surface, and fixing the plurality of collimator lenses at the adjusted positions. (emphasis added)

Murray also does not teach or suggest these particularly claimed elements, as recited by claim 12.

Claim 13 recites a laser apparatus comprising a block "wherein said block has a reference surface which is flat, perpendicular to optical axes of said plurality of laser diodes, and located on a forward side of portions of said block to which said plurality of laser diodes are fixed."

As discussed above, Murray fails to teach or suggest any reference surface which is flat, *perpendicular to optical axes of the plurality of laser diodes*, and located on a forward side of portions of the block to which the plurality of laser diodes are fixed. Furthermore, Murray also does not teach or suggest that "each of the plurality of laser diodes is fixed to said block in such a manner that a position of said each of the plurality of laser diodes in a direction parallel to said optical axes is adjusted based on a focal length of one of the plurality of collimator lenses corresponding to said each of the plurality of laser diodes, and said plurality of collimator lenses are fixed to said reference surface in such a manner that positions of the plurality of collimator lenses are adjusted along said reference surface," as recited by claim 13. Therefore, claim 13 is patentable over Murray for at least the aforementioned reasons. Reconsideration and withdrawal of the rejection under 35 U.S.C. § 103(a) are respectfully requested.

Rejection Under 35 U.S.C. § 103(a) - Murray in view of Chiappetta et al.

Claims 2 and 3 have been rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Murray in view of Chiappetta et al. (U.S. Patent No. 6,724,791; "Chiappetta"). The rejection is respectfully traversed.

As discussed above, Murray fails to teach or suggest all of the elements of independent claim 1. Chiappetta does not remedy the deficiencies of Murray. Although Chiappetta discloses a laser module (12) as shown in Fig. 2 which is in thermal contact with a flat surface (58) of a cooling element (16), there is still no teaching or suggestion in Chiappetta of "a lens-setting surface which is flat, ***perpendicular to optical axes of said plurality of laser diodes***, and located

on a forward side of said plurality of laser diodes at a predetermined distance from said light-emission points, and said collimator-lens array is fixed to said block so that an end surface of the collimator-lens array is in contact with said lens-setting surface," as recited by claim 1 (emphasis added).

At least by virtue of the aforementioned reasons, claim 1 is distinguished over Murray in view of Chiappetta. Claims 2 and 3 are dependent claims including all of the elements of independent claim 1. Therefore, claims 2 and 3 are patentable over Murray in view of Chiappetta for at least the aforementioned reasons based on their dependencies, as well as for their additionally recited features. Reconsideration and withdrawal of the rejection under 35 U.S.C. § 103(a) are respectfully requested.

Rejection Under 35 U.S.C. § 103(a) - Murray in view of Andrews and further in view of Andrews et al. and Kuniyasu et al.

Claims 7-10 have been rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Murray in view of Andrews (U.S. Patent Number 5,640,188; "Andrews '188") and further in view of Andrews et al. (U.S. Patent No. 5,432,535; "Andrews '535") and Kuniyasu et al. (U.S. Patent Application Publication No. 2002/0018499; "Kuniyasu"). The rejection is respectfully traversed.

As discussed above, Murray fails to teach or suggest all of the elements of independent claim 1. None of Andrews '188, Andrews '535 and Kuniyasu remedy the deficiencies of Murray. Andrews '188 and Andrews '535 disclose multiple diode lasers affixed to surfaces and

which allow for thermal dissipation. However, Andrews '188, Andrews '535 both fail to teach or suggest "a lens-setting surface which is flat, perpendicular to optical axes of said plurality of laser diodes, and located on a forward side of said plurality of laser diodes at a predetermined distance from said light-emission points, and said collimator-lens array is fixed to said block so that an end surface of the collimator-lens array is in contact with said lens-setting surface," as recited by claim 1.

Kuniyasu discloses embodiments of a semiconductor laser with a plurality of layers formed on a substrate and which achieves improved heat dissipation characteristics. However, Kuniyasu also fails to teach or suggest "a lens-setting surface which is flat, perpendicular to optical axes of said plurality of laser diodes, and located on a forward side of said plurality of laser diodes at a predetermined distance from said light-emission points, and said collimator-lens array is fixed to said block so that an end surface of the collimator-lens array is in contact with said lens-setting surface," as recited by claim 1.

At least by virtue of the aforementioned reasons, claim 1 is distinguished over Murray in view of Andrews '188, and further in view of Andrews '535 and Kuniyasu. Claims 7-10 are dependent claims including all of the elements of independent claim 1. Therefore, claims 7-10 are patentable over Murray in view of Andrews '188, and further in view of Andrews '535 and Kuniyasu for at least the aforementioned reasons based on their dependencies, as well as for their additionally recited features. Reconsideration and withdrawal of the rejection under 35 U.S.C. § 103(a) are respectfully requested.

Rejection Under 35 U.S.C. § 103(a) - Murray in view of Andrews and further in view of Kuniyasu et al.

Claim 14 has been rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Murray in view of Andrews '188 and further in view of Kuniyasu. The rejection is respectfully traversed.

As discussed above, none of Murray, Andrews '188 and Kuniyasu, alone or in combination, teach or suggest all of the elements of independent claim 13, and in particular, of a laser apparatus comprising a block "wherein said block has a reference surface which is flat, perpendicular to optical axes of said plurality of laser diodes, and located on a forward side of portions of said block to which said plurality of laser diodes are fixed," as recited by claim 13.

At least by virtue of the aforementioned reasons, claim 13 is distinguished over Murray in view of Andrews '188 and further in view of Kuniyasu. Claim 14 is a dependent claim including all of the elements of independent claim 13. Therefore, claim 14 is patentable over Murray in view of Andrews '188 and further in view of Kuniyasu for at least the aforementioned reasons based on its dependency, as well as for its additionally recited features. Reconsideration and withdrawal of the rejection under 35 U.S.C. § 103(a) are respectfully requested.

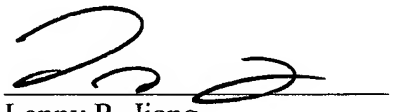
Newly Added Claims

Claims 27-29 are newly added by this Amendment, and are allowable over the cited references based on their dependencies as well as for their additionally recited features.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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